

catalyst to thereby *in situ* re-activate the deteriorated catalyst. Support for claim 14 can be found in the specification at page 7, lines 3-10.

No new matter within the meaning of § 132 has been added by any of the amendments.

Accordingly, Applicants respectfully request the Examiner to enter the indicated amendments of Appendix A and allow all the presently pending claims.

**1. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 112, ¶ 2**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 112, ¶ 2 as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Office Action states:

Claim 5 and 11-13 recite that the catalyst has "reduced" activity. This term is indefinite since one of ordinary skill is without a point of reference to determine how catalyst activity is "reduced".

Applicants respectfully traverse the rejections. However, in the interest of advancing prosecution of the allowed claims, Applicants have amended the claims to recite that the claimed catalyst has been gradually deteriorated during a long term continuous reaction operation.

Accordingly, Applicants respectfully submit that the presently pending claims particularly point out and distinctly claim the invention and request withdrawal of the rejection of claims 5 and 11-13 under 35 U.S.C. § 112, ¶ 2.

**2. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 102(b)**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Application Publication No. 2002/0058582 ("Kasuga et al. publication"). The Office Action states:

Kasuga teaches a method of reactivating a catalyst for methacrylic acid production is provided, said catalyst being used in the occasions of producing methacrylic acid through vapor-phase oxidation of methacrolein or vapor-phase oxidative dehydrogenation of isobutyric acid, containing P and Mo and exhibiting reduced catalytic activity, which method is characterized by treating the catalyst with a gas which contains a nitrogen-containing heterocyclic compound. See paragraph 0008.

The method is further characterized by treating the catalyst with a gas which contains a nitrogen-containing heterocyclic compound and steam; or with a gas which contains a nitrogen-containing heterocyclic compound and another gas which contains steam. See paragraph 0009.

The nitrogen-containing heterocyclic compound to be is at least one compound selected from pyridine, piperidine, piperazine, quinoline

and derivatives thereof is conveniently used.  
See paragraph 00014.

Applicants respectfully traverse the rejection because the Kasuga et al. publication is not prior art with respect to the captioned application under any provision of § 102. The Office Action has improperly applied the Kasuga et al. publication because Kasuga et al. is the patent issuing off the parent application of the captioned application and therefore cannot be prior art.

In particular, the Kasuga et al. publication, now U.S. Patent No. 6,664,206 was filed as U.S. Patent Application no. 09/956,896 on September 21, 2001. The application was subsequently published on May 16, 2002, which is after the filing date of the parent application from which the captioned divisional application depends. Clearly, the Kasuga et al. publication cannot be prior art.

The request for translations of the foreign priority document is neither relevant to the outstanding rejection nor necessary to overcome the outstanding § 102(b) rejection.

Accordingly, Applicants respectfully submit that the presently claimed invention is not anticipated by Kasuga et al. and respectfully request the Examiner to reconsider and withdraw the § 102(b) rejection.

**3. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 102(b)**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,814,305 ("Kamogawa et al."). The Office Action states:

Kamogawa teaches that a highly active catalyst can be regenerated by treating the deactivated catalyst with aqueous ammonia and an aqueous solution containing at least one of a nitrogen-containing heterocyclic compound, an amine, and ammonium carbonate, in the presence, if necessary, of nitrate ions and/or either aqueous hydrogen peroxide or ozone.

The patent teaches regeneration of a phosphorus-, molybdenum- and alkali metal-containing catalyst for the production of an unsaturated carboxylic acid by vapor-phase oxidation of an unsaturated aldehyde.

Nitrogen-containing heterocyclic compounds or amines which can be used include, for example, pyridine, piperazine, pyrimidine, pyrazine, piperazine, triethylamine, triethanolamine, and hydrochlorides, sulfates and nitrates of them. See column 2, lines 61-65.

Steam is added as an ingredient for the reaction. See examples.

The foregoing anticipates the rejected claims within the meaning of section 102.

Applicants respectfully traverse the rejection because Kamogawa et al. does not teach each and every claimed limitation of the presently claimed invention. Kamogawa et al. fails to

expressly or inherently teach a method of treating a deactivated catalyst with a gas which contains a nitrogen-containing heterocyclic compound to reactivate the catalyst. Instead, Kamogawa et al. teaches use of an *aqueous* solution rather than the presently claimed gas.

#### Rule of Law

The Federal Circuit has spoken clearly and at some length on the question of anticipation. Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Those elements must be expressly disclosed as in the claim. In re Bond, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

The prior art reference must also be enabling, thereby placing the allegedly disclosed matter in the possession of the public. In re Brown, 241 U.S.P.Q. 245, 249 (C.C.P.A. 1964). In order to accomplish this, the reference must be so particular and definite that from it alone, without experiment or the exertion of his own inventive skill, any person versed in the art to which it pertains could construct and use it. Id. at 250.

Subject Matter of the Amended Claims

Independent claims 5 and 11-13 recite a process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or catalytic vapor-phase oxidative dehydrogenation of isobutyric acid, characterized by using a catalyst which has been reactivated by a method comprising:

treating a catalyst which has been gradually deteriorated during a long-term continuous reaction operation for use in methacrylic acid production by vapor-phase oxidation of methacrolein or vapor phase oxidative dehydrogenation of isobutyric acid, which catalyst contains P and Mo and exhibits reduced activity, with a gas containing a nitrogen-containing heterocyclic compound and steam.

Analysis

Kamogawa et al. recites a method of reactivating a catalyst for methacrylic production by treating the catalyst with a gas containing a nitrogen-containing heterocyclic compound. However, Kamogawa et al. fails to teach the presently claimed limitation of reactivating the catalyst with a gas. Instead, Kamogawa et al. teaches the treatment of deactivated catalyst with an aqueous solution, and the treatment of deactivated catalyst by adding water

and aqueous ammonia. See Claim 1 of Kamogawa et al. (stating "(a) treating the catalyst with an aqueous ammonia containing . . . (b) treating the catalyst with an aqueous solution containing . . ."); see also col. 1, lines 67-68 (stating "Water is added to the deactivated catalyst and aqueous ammonia is further added with stirring.").

Nowhere does Kamogawa et al. teach using a gas containing a nitrogen-containing heterocyclic compound. Kamogawa et al. clearly fails to teach the critical limitation of using a gas and instead relies on an aqueous medium. Moreover, as will be shown *infra*, the presently claimed limitation is both unobvious and unexpected in its effect on catalyst reactivation.

Accordingly, Applicants respectfully submit that the presently claimed invention is not anticipated by Kamogawa et al. and respectfully request the Examiner to reconsider and withdraw the § 102(b) rejection.

**4. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 102(b)**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 102(b) as being anticipated by JP 60-232247 ("JP '247"). The Office Action states:

This patent teaches regeneration of a molybdophosphoric acid catalyst with nitrogen

containing heterocyclic ring containing compound. The catalyst is used for the vapor phase oxidation of organic compounds.

The foregoing anticipates the rejected claims within the meaning of section 102.

Applicants respectfully traverse the rejection because JP '247 does not teach each and every claimed limitation of the presently claimed invention. JP '247 fails to expressly or inherently teach a method of treating a deactivated catalyst with a gas which contains a nitrogen-containing heterocyclic compound to reactivate the catalyst. Instead, JP '247 teaches use of an aqueous solution rather than the presently claimed gas.

#### Rule of Law

The Federal Circuit has spoken clearly and at some length on the question of anticipation. Anticipation requires that each and every element of the claimed invention be disclosed in a single prior art reference. Verdegaal Bros. v. Union Oil Co. of California, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). Those elements must be expressly disclosed as in the claim. In re Bond, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990).

The prior art reference must also be enabling, thereby placing the allegedly disclosed matter in the possession of the public. In



re Brown, 241 U.S.P.Q. 245, 249 (C.C.P.A. 1964). In order to accomplish this, the reference must be so particular and definite that from it alone, without experiment or the exertion of his own inventive skill, any person versed in the art to which it pertains could construct and use it. Id. at 250.

#### Subject Matter of the Amended Claims

Independent claims 5 and 11-13 recite a process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or catalytic vapor-phase oxidative dehydrogenation of isobutyric acid, characterized by using a catalyst which has been reactivated by a method comprising:

treating a catalyst which has been gradually deteriorated during a long-term continuous reaction operation for use in methacrylic acid production by vapor-phase oxidation of methacrolein or vapor phase oxidative dehydrogenation of isobutyric acid, which catalyst contains P and Mo and exhibits reduced activity, with a gas containing a nitrogen-containing heterocyclic compound and steam.

#### Analysis

JP '247 recites a method of reactivating a catalyst for

methacrylic production by treating the deteriorated catalyst dispersed in an aqueous medium with a nitrogen containing heterocyclic compound. JP '247 teaches that a deteriorated catalyst and pyridine (or piperidine or piperazine or quinoline) is treated with stirring in water which contains nitric acid. However, JP '247 fails to teach treating the deteriorated catalyst with a gas containing a nitrogen-containing heterocyclic compound. JP '247 fails to teach the critical limitation of using a gas and instead relies on an aqueous medium. Moreover, as will be shown *infra*, the presently claimed limitation is both unobvious and unexpected in its effect on catalyst reactivation.

Accordingly, Applicants respectfully submit that the presently claimed invention is not anticipated by JP '247 and respectfully request the Examiner to reconsider and withdraw the § 102(b) rejection.

**5. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 103(a)**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 103(a) as being unpatentable over Kasuga et al. in view of U.S. Patent No. 5,716,895 ("Sugi et al.").

The applied references do not explicitly teach application of steam. It is for this proposition that the examiner applies Sugi. Specifically, Sugi illustrates that

application of steam to regenerate molybdophosphoric acid catalyst is commonplace in the art. See column 1, lines 27 -43. One of ordinary skill would have been motivated to modify the applied references to add steam since Sugi teaches that this application increases surface area of the catalyst. See column 1, lines 39-43. Therefore, the combined references render the rejected claims obvious since the combination teach the elements of the claimed invention with a reasonable expectation of success.

Applicants respectfully traverse the rejection because Kasuga et al. is not prior art with respect to the captioned application under any provision of § 102. The Office Action has improperly applied Kasuga et al. because Kasuga et al. is the parent application of the captioned application and therefore cannot be prior art. Kasuga et al. was filed as U.S. Patent Application no. 09/956,896 on September 21, 2001. Moreover, the cited reference was published on May 16, 2002, which is after the filing date of the parent application from which the captioned divisional application depends. Clearly, Kasuga et al. is not prior art.

Accordingly, Applicants respectfully submit that the presently claimed invention is unobvious over the cited references and respectfully request reconsideration and withdrawal of the rejections of claims 5 and 11-13.

**6. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 103(a)**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 103(a) as being unpatentable over Kamogawa et al. in view of U.S. Patent No. 5,716,895 ("Sugi et al.").

The applied references do not explicitly teach application of steam. It is for this proposition that the examiner applies Sugi. Specifically, Sugi illustrates that application of steam to regenerate molybdophosphoric acid catalyst is commonplace in the art. See column 1, lines 27 -43. One of ordinary skill would have been motivated to modify the applied references to add steam since Sugi teaches that this application increases surface area of the catalyst. See column 1, lines 39-43. Therefore, the combined references render the rejected claims obvious since the combination teach the elements of the claimed invention with a reasonable expectation of success.

Applicants respectfully traverse the rejection because neither of the cited references teaches the critical limitation of using a gas rather than an aqueous solution. One of ordinary skill would not have been motivated to use a gas rather than a liquid given the almost universal acceptance and use of aqueous solutions to reactivate catalysts. But even assuming *arguendo* that a *prima facie* has been established, secondary considerations such as long felt but unsolved need for a simple and effective method for reactivating catalysts, failure of others to meet this need, and

unexpected results insofar as the presently claimed gas treatment is just as if not more effective than an aqueous treatment overwhelmingly suggests that the presently pending claims define a patentable invention.

Rule of Law

The Federal Circuit ruled that a *prima facie* case of obviousness must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

However, even if a *prima facie* case of obviousness has been established, secondary considerations such as commercial success,

long felt but unsolved need, failure of others, and unexpected results may nevertheless give rise to a patentable invention. Graham v. John Deere Co., 148 U.S.P.Q. 459 (1966). For example, evidence such as superiority in a property the compound shares with the prior art can rebut a *prima facie* case of obviousness. See In re Chupp, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987).

#### Analysis

Kamogawa et al. teaches a method to treat deactivated catalyst with a liquid nitrogen-containing compound but fails to teach or suggest the critical limitation of treating deactivated catalyst with a gaseous nitrogen-containing compound as presently claimed. In particular, Kamogawa et al. teaches the treatment of deactivated catalyst with an aqueous solution, and the treatment of deactivated catalyst by adding water and aqueous ammonia. See Claim 1 of Kamogawa et al. (stating "(a) treating the catalyst with an aqueous ammonia containing . . . (b) treating the catalyst with an aqueous solution containing . . ."); see also col. 1, lines 67-68 (stating "Water is added to the deactivated catalyst and aqueous ammonia is further added with stirring."). However, nowhere does Kamogawa et al. teach using a gas containing a nitrogen-containing heterocyclic compound. Clearly, Kamogawa et al. fails to teach the critical limitation of using a gas and instead relies on aqueous medium.

But assuming *arguendo* that a *prima facie* has been established, secondary considerations such as long felt but unsolved need for a simple and effective method for reactivating catalysts, failure of others to meet this need, and unexpected results insofar as the presently claimed gas treatment is just as if not more effective than an aqueous treatment overwhelmingly reasons that the presently pending claims define a patentable invention.

In particular, the processes of Kamogawa et al. require multiple steps whereas the presently claimed invention requires far fewer steps. For example, the treatment with aqueous solutions of Kamogawa et al. require the steps of: (1) taking the catalyst out of reactor, (2) treating the catalyst either with a nitrogen-containing heterocyclic compound or in an aqueous solution which contains the same, (3) drying, (4) molding the catalyst if necessary, (5) calcining the catalyst, and (6) filling a reactor with the regenerated catalyst.

The presently claimed invention, on the other hand, does not require that the catalyst be taken out of the reactor. In particular, a gas which contains a nitrogen-containing compound is introduced into a reactor containing deactivated catalyst. Once reactivated by the gas, the catalyst can then be dried and calcined inside the reactor.

This simple removal of a single step has an enormous effect on

an industrial scale because the reactivation of the deteriorated catalyst can be performed *in situ*. Several tens of tons of catalyst are regularly used in industry whereby a simple operation of introducing a gas imparts a significant advantage over known reactivation processes. Moreover and quite unexpectedly, the presently claimed method does not result in an inferior catalyst. Clearly, reactivation in the reaction tubes is both operationally simpler and economically advantageous.

Accordingly, Applicants respectfully submit that the presently claimed invention is unobvious over Kamogawa et al. and Sugi et al. and respectfully request reconsideration and withdrawal of the rejections of claims 5 and 11-13.

**7. Rejection of Claims 5 and 11-13**  
**under 35 U.S.C. § 103(a)**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 103(a) as being unpatentable over JP '247 in view of U.S. Patent No. 5,716,895 ("Sugi et al.").

The applied references do not explicitly teach application of steam. It is for this proposition that the examiner applies Sugi. Specifically, Sugi illustrates that application of steam to regenerate molybdophosphoric acid catalyst is commonplace in the art. See column 1, lines 27 -43. One of ordinary skill would have been motivated to modify the applied references to add steam since Sugi teaches that this application



increases surface area of the catalyst. See column 1, lines 39-43. Therefore, the combined references render the rejected claims obvious since the combination teach the elements of the claimed invention with a reasonable expectation of success.

Applicants respectfully traverse the rejection because neither JP '247 nor Sugi et al. teaches the critical limitation of using a gas rather than an aqueous solution. One of ordinary skill would not have been motivated to use a gas rather than a liquid given the almost universal acceptance and use of aqueous solutions to reactivate catalysts. But even assuming *arguendo* that a *prima facie* has been established, secondary considerations such as long felt but unsolved need for a simple and effective method for reactivating catalysts, failure of others to meet this need, and unexpected results insofar as the presently claimed gas treatment is just as if not more effective than an aqueous treatment overwhelmingly suggests that the presently pending claims define a patentable invention.

#### Rule of Law

The Federal Circuit ruled that a *prima facie* case of obviousness must establish: (1) some suggestion or motivation to modify the references; (2) a reasonable expectation of success; and (3) that the prior art references teach or suggest all claim

limitations. Amgen, Inc. v. Chugai Pharm. Co., 18 U.S.P.Q.2d 1016, 1023 (Fed. Cir. 1991); In re Fine, 5 U.S.P.Q.2d 1596, 1598 (Fed. Cir. 1988); In re Wilson, 165 U.S.P.Q. 494, 496 (C.C.P.A. 1970).

A *prima facie* case of obviousness must also include a showing of the reasons why it would be obvious to modify the references to produce the present invention. See Ex parte Clapp, 277 U.S.P.Q. 972, 973 (Bd. Pat. App. & Inter. 1985). The Examiner bears the initial burden to provide some convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings. Id. at 974.

However, even if a *prima facie* case of obviousness has been established, secondary considerations such as commercial success, long felt but unsolved need, failure of others, and unexpected results may nevertheless give rise to a patentable invention. Graham v. John Deere Co., 148 U.S.P.Q. 459 (1966). For example, evidence such as superiority in a property the compound shares with the prior art can rebut a *prima facie* case of obviousness. See In re Chupp, 2 U.S.P.Q.2d 1437, 1439 (Fed. Cir. 1987).

### Analysis

JP '247 recites a method of reactivating a catalyst for methacrylic production by treating the deteriorated catalyst

dispersed in an aqueous medium with a nitrogen containing heterocyclic compound. JP '247 teaches that a deteriorated catalyst and pyridine (or piperidine or piperazine or quinoline) is treated with stirring in water which contains nitric acid.

However, JP '247 fails to teach treating the deteriorated catalyst with a gas containing a nitrogen-containing heterocyclic compound. JP '247 fails to teach the critical limitation of using a gas and instead relies on an aqueous medium. Nowhere does JP '247 teach using a gas containing a nitrogen-containing heterocyclic compound.

But even assuming *arguendo* that a *prima facie* has been established, secondary considerations such as long felt but unsolved need for a simple and effective method for reactivating catalysts, failure of others to meet this need, and unexpected results insofar as the presently claimed gas treatment is just as if not more effective than an aqueous treatment overwhelmingly reasons that the presently pending claims define a patentable invention.

In particular, the processes of JP '247 require multiple steps whereas the presently claimed invention requires far fewer steps. For example, the treatment with aqueous solutions of JP '247 require the steps of: (1) taking the catalyst out of reactor, (2)

treating the catalyst either with a nitrogen-containing heterocyclic compound or in an aqueous solution which contains the same, (3) drying, (4) molding the catalyst if necessary, (5) calcining the catalyst, and (6) filling a reactor with the regenerated catalyst.

The presently claimed invention, on the other hand, does not require that the catalyst be taken out of the reactor. In particular, a gas which contains a nitrogen-containing compound is introduced into a reactor containing deactivated catalyst. Once reactivated by the gas, the catalyst can then be dried and calcined inside the reactor.

This simple removal of a single step has an enormous effect on an industrial scale because the reactivation of the deteriorated catalyst can be performed *in situ*. Several tens of tons of catalyst are regularly used in industry whereby a simple operation of introducing a gas imparts a significant advantage over known reactivation processes. Moreover and quite unexpectedly, the presently claimed method does not result in an inferior catalyst. Clearly, reactivation in the reaction tubes is both operationally simpler and economically advantageous.

Accordingly, Applicants respectfully submit that the presently claimed invention is unobvious over JP '247 and Sugi et al. and respectfully request reconsideration and withdrawal of the

rejections of claims 1 and 11-13.

**8. Double Patenting Rejection of claims 5 and 11-13  
over U.S. Patent 6,664,206**

The Office Action rejects claims 5 and 11-13 under 35 U.S.C. § 101 under statutory double patenting with regard to claims 1-26 of U.S. Patent No. 6,664,206 ("Kasuga et al.").

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ...may obtain a patent therefor ..." (Emphasis added). Thus, the term "same invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Applicants traverse the statutory double patenting rejection under 35 U.S.C. § 101 because the presently pending claims 5 and 11-13 are not identical or coextensive in scope with claims 1-26 of Kasuga et al.

In particular, claims 1-26 of Kasuga et al. recite a "method

of reactivating a catalyst" whereas the subject matter of the claims of the present divisional application is directed to "a process for producing methacrylic acid". The claims between the parent application and those of the divisional application claiming priority off the parent application define different subject matter as required by a Restriction Requirement. Hence, the presently claimed invention cannot be subject to statutory double patenting rejection. With regard to any putative obviousness type double patenting rejection, should the Examiner be considering making one, Applicants respectfully point out the rule of law as explicated in MPEP 804.01 specifically prohibiting an Examiner from making an obviousness type double patenting rejection when a divisional application is filed in response to a restriction made in the parent. In re Kaplan, et al., 229 U.S.P.Q. 678 (Fed. Cir. 1986).

The Federal Circuit has repeatedly held that using an Applicant's own disclosure to show that their invention was but an obvious variation of their claimed invention is impermissible. See In re Vogel, 164 U.S.P.Q. 619 (C.C.P.A. 1970); In re Aldrich, 158 U.S.P.Q. 311 (C.C.P.A. 1968); In re Boylan, 157 U.S.P.Q. 370 (C.C.P.A. 1968) (stating that using applicant's own invention disclosure, which is not a 1-year time bar, as prior art against him is impermissible). Hence, the Examiner cannot later make an obviousness type double patenting rejection in the later filed

divisional application over Applicant's own invention disclosure.  
Id.

In the present case, Applicants note that the cited patent contains the prosecuted claims of Group I made in the Restriction Requirement of January 14, 2003, in the parent application. The presently pending claims are directed to Group II claims made in the same Restriction Requirement. Therefore and according to clear precedent, the presently pending claims are not subject to an obviousness type double patenting rejection.

Accordingly, Applicants respectfully submit that the presently claimed invention is not identical or coextensive with claims 1-26 of Kasuga et al. and respectfully request reconsideration and withdrawal of the statutory double patenting rejection of claims 1 and 11-13.

**9. Double Patenting Rejection of claims 5 and 12**  
**over U.S. Patent 6,664,206**

The Office Action rejects claims 5 and 12 under 35 U.S.C. § 101 under statutory double patenting with regard to claims 1-8 of U.S. Patent No. 6,673,733 ("Fukumoto et al.").

A rejection based on double patenting of the "same invention" type finds its support in the language of 35 U.S.C. 101 which states that "whoever invents or discovers any new and useful process ...may obtain a patent therefor ..." (Emphasis added). Thus, the term "same

invention," in this context, means an invention drawn to identical subject matter. See *Miller v. Eagle Mfg. Co.*, 151 U.S. 186 (1894); *In re Ockert*, 245 F.2d 467, 114 USPQ 330 (CCPA 1957); and *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970).

A statutory type (35 U.S.C. 101) double patenting rejection can be overcome by canceling or amending the conflicting claims so they are no longer coextensive in scope. The filing of a terminal disclaimer cannot overcome a double patenting rejection based upon 35 U.S.C. 101.

Applicants traverse the statutory double patenting rejection under 35 U.S.C. § 101 because the presently pending claims 5 and 12 are not identical or coextensive in scope with claims 1-8 of Fukumoto et al.

Claims 1-8 of Fukumoto et al. recite a regeneration treatment of a deteriorated catalyst conducted in an *aqueous* medium. This is clearly seen from the phrase "ammonium ions and nitrate anions" in claims 1 and 2 of the U.S. Patent No. 6,673,733. Fukumoto et al. also teaches at col. 6, lines 4-12, that the claimed subject matter is directed to the use of an aqueous medium. For example, Fukumoto et al. teaches under the heading "Regeneration Treatment" at col. 8, lines 25-38, that the deteriorated catalyst is dispersed in 200 ml of water. In contrast, the critical feature of the presently claimed invention lies in the use of a gas as opposed to an aqueous



dispersion. Hence, it is quite clear that claims 5 and 12 of the present application are not identical or coextensive with claims 1-8 of Fukumoto et al.

Accordingly, Applicants respectfully submit that the presently claimed invention is not identical or coextensive with claims 1-8 of Fukumoto et al. and respectfully request reconsideration and withdrawal of the statutory double patenting rejection of claims 5 and 12.

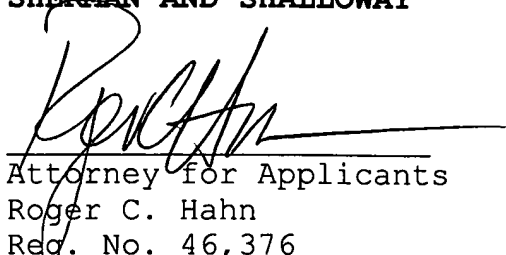
#### CONCLUSION

In light of the foregoing, Applicants submit that the application is now in condition for allowance. The Examiner is therefore respectfully requested to reconsider and withdraw the rejection of the pending claims and allow the pending claims. Favorable action with an early allowance of the claims pending is earnestly solicited.

Respectfully submitted,

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Attorney Docket No. S-2491/DIV  
MAIL STOP AMENDMENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:                    )  
  )  
KASUGA et al.                            )  
  )  
Serial No.: 10/649,817                   )  
  )  
Filed:           August 28, 2003        )  
  
For:           **METHOD FOR REACTIVATING CATALYST FOR METHACRYLIC  
                  ACID PREPARATION**

Appendix A

Please amend the claims as indicated according to 37 C.F.R.  
§ 1.121 concerning a manner for making claim amendments.

Claim 1-4 (Cancelled)

5. (Currently amended) A process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or catalytic vapor-phase oxidative dehydrogenation of isobutyric acid, characterized by using a catalyst which has been reactivated by method comprising treating a catalyst which has been gradually deteriorated during a long-term continuous reaction operation for use in methacrylic acid production by vapor-phase oxidation of methacrolein or vapor-phase oxidative

dehydrogenation of isobutyric acid, which catalyst contains P and Mo and exhibits reduced activity, with a gas containing a nitrogen-containing heterocyclic compound.

Claim 6-10 (Cancelled)

11. (Currently amended) A process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or catalytic vapor-phase oxidative dehydrogenation of isobutyric acid, characterized by using a catalyst which has been reactivated by a method comprising treating a catalyst which has been gradually deteriorated during a long-term continuous reaction operation for use in methacrylic acid production by vapor-phase oxidation of methacrolein or vapor phase oxidative dehydrogenation of isobutyric acid, which catalyst contains P and Mo and exhibits reduced activity, with a gas containing a nitrogen-containing heterocyclic compound and steam; or with a gas containing a nitrogen-containing heterocyclic compound and a steam containing gas.

12. (Currently amended) A process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or

catalytic vapor-phase oxidative dehydrogenation of isobutyric acid, characterized by using a catalyst which has been reactivated by a method comprising treating a catalyst which has been gradually deteriorated during a long-term continuous reaction operation for use in methacrylic acid production by vapor-phase oxidation of methacrolein or vapor-phase oxidative dehydrogenation of isobutyric acid, which catalyst contains P and Mo and exhibits reduced activity, with a gas containing a nitrogen-containing heterocyclic compound, wherein the nitrogen-containing heterocyclic compound is at least one compound selected from pyridine, piperidine, piperazine, quinoline and derivatives thereof.

13. (Currently amended) A process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or catalytic vapor-phase oxidative dehydrogenation of isobutyric acid, characterized by using a catalyst which has been reactivated by a method comprising treating a catalyst which has been gradually deteriorated during a long-term continuous reaction operation for use in methacrylic acid production by vapor-phase oxidation of methacrolein or vapor phase oxidative dehydrogenation of isobutyric acid, which catalyst contains P

and Mo and exhibits reduced activity, with a gas containing a nitrogen-containing heterocyclic compound and steam; or with a gas containing a nitrogen-containing heterocyclic compound and a steam containing gas, wherein the nitrogen-containing heterocyclic compound is at least one compound selected from pyridine, piperidine, piperazine, quinoline and derivatives thereof.

14. (New) The process for producing methacrylic acid through catalytic vapor-phase oxidation of methacrolein or catalytic vapor-phase oxidative dehydrogenation of isobutyric acid according to any one of claims 5 and 11-13 wherein the reactivation treatment is conducted within reaction tubes.